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CEMASTEA INFO

Newsletter

Building Back Better



Editorial: Building Back Better

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We once again welcome our readers to the seventh issue of our CEMASTEA info Newsletter. We keep improving the issues based on your feedback, and we sincerely appreciate it.



The world continues on its journey of resilience and building back better from the effects of COVID 19. While in 2020, the mantra for protection from COVID - 19 was masking, sanitising and keeping social distance, the choice now for long term protection is getting vaccinated. At CEMASTEA, our leadership continues to be at the forefront in supporting staff and clients and keeping them safe. Building back better is the rallying call across the world for getting economies back on track. While most teachers and students are back in school, the effects of the pandemic still affect the learning process.

At CEMASTEA, we are building back better by deploying tools of resilience to offer business continuity. Our solid orientation for using ICT tools allowed us to navigate new online frontiers and migrate our training online with resounding success. Good command of ICT made it easy to adapt to new online collaboration technologies and tools to deliver remote learning leveraging virtual environments. The culture of collaboration, teamwork and continuous learning helped us to cope with the demands of the current COVID 19 situation with minimal stress and conflict. Working from home, having a core group of officers at the Centre, and executing a plan to support officers consistent with the guidelines and laid down protocols has kept the centre's core programmes of offering training going. Digital collaboration using ICT continue to provide seamless communication across teams at all levels.

As will be highlighted by our Director, we continue with our training activities. In this issue, we highlight various activities that are a testament to the Centre's demonstration of leadership and resilience in Teacher Professional Development (TPD). This includes CEMASTEA's flagship programmes on STEM education, ICT and Education for Sustainable Development (ESD).

Once again, enjoy your reading and do not hesitate to give us feedback on any of the stories. Kindly use the link <https://forms.gle/i6mj6U2taDilhLTy8> to share your feedback.

Thuo Karanja, Editor

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Competency Based Curriculum (CBC)

Picture showing a pupils' homework output on the sub strand 'care and love for animals'

Message from the Director

Welcome to our seventh edition of the CEMASTEIA Info Newsletter. At CEMASTEIA, we continue to build resilience and make efforts to building back better and recover lost time due to the COVID-19 pandemic. With the support of our key stakeholders, including the Ministry of Education, Teachers Service Commission, and County Teacher Capacity Development Committees, we continue to roll out our flagship training programmes in STEM, ICT, Lesson Study, Education for Sustainable Development (ESD) and Research.

Using lessons learnt from implementing training at the height of the COVID-19 period in 2020, the Centre successfully implemented ICT training. The training was under the theme "Enhancing teachers' Competency in ICT Integration in Teaching and Learning Using Virtual Platforms," focusing on the continued building of teachers' pedagogical skills for online and remote teaching and learning. As has become the norm, this course was delivered through virtual platforms; Google Classroom and Microsoft Teams. 2000 teachers from all subjects participated.

Through the Research and Development, Knowledge Management department, the Centre organised a writing mentorship programme for about 20 teachers. This one month programme allowed STEM teachers to develop skills for documenting their daily classroom experiences through authoring. The outcome will be the inaugural CEMASTEIA Practitioners Journal. The Centre conducted one-week training for teachers of mathematics and sciences from Sunshine Secondary School under the theme *of enhancing effective learner involvement through learner-centred pedagogies'*. The course aimed at strengthening the ability of teachers in practising learner-centred pedagogies.

CEMASTEIA staff, as a tradition, continues to build its capacity to deliver. To this end, the ICT department organised self-study courses for staff on Database foundations and Java fundamentals in collaboration with Oracle Academy. This ongoing training will help upgrade staff's ICT skills to adapt to the ever-changing global technological environment. The staff has also undergone sensitisation on COVID - 19 vaccination and self-testing for HIV and Aids.

At the continental level, CEMASTEIA continues to play a critical role in STEM education. I delivered the keynote speech at the 1st All Africa STEM Awareness Conference held on 23rd and 24th September in Zambia on behalf of the AUC CESA STEM Cluster. SMASE Africa will be holding its 18th Conference on Mathematics, Science and Technology Education in Africa (COMSTEDA18) from 23rd to 25th November 2021. Universidade Rovuma, Nampula, Mozambique will host this virtual conference. CEMASTEIA is always willing to support teachers to participate in this annual conference.

Finally, I remind our stakeholders that COVID 19 is still with us and, therefore, the need to keep the basic protocols. Kindly consider getting a COVID-19 vaccination as guided by the Ministry of Health.

Enjoy your reading.

Jacinta L. Akatsa, HSC, Director

The 5th Annual STEM Principals' Workshop

The STEM model schools programme was established in 2016 by the Ministry of Education, with CEMASTEА given the mandate to transform them into exemplary STEM learning and resource centres. The STEM model schools are expected to demonstrate school and teacher leadership practices towards realising their STEM vision and an inviting school climate and culture. To support these schools in realising this vision, CEMASTEА introduced customised training on STEM practices for teachers and principals in 2017. These pieces of training are conducted on an annual basis. The 5th Annual STEM Principals' workshop on the theme: *Pedagogical leadership for effective implementation of STEM education* was held virtually from 7th to 11th June 2021 due to the COVID-19 pandemic. The workshop targeted the 103 STEM Model Schools' Principals countrywide.

During the workshop, the principals were briefed on the need for a clear vision for the STEM model schools and the impact STEM activities could have on their schools. They also discussed the expected STEM model school activities such as the maker's spaces which are informal environments where learners tinker around with resources to make products that address real-life challenges while promoting creativity and innovation; projects on Education for Sustainable Development (ESD). They were also introduced to a creative thinking tool (SCAMPER) helpful in developing creativity and critical thinking and problem-solving skills in learners as they implement their STEM projects.

Some of the expected outcomes and impact for STEM programmes in schools include learner activities inside and outside classrooms; Development of quality and adequate teaching and learning resources; Productive and collegial relations between teachers and learners; Increasing enrolment in STEM subjects, and better learner achievement in STEM subjects; More learner creativity, Innovativeness and Participation in STEM-related symposium and science fairs.

During the workshop, the principals had the opportunity to learn from each other as they shared a wide range of initiatives so far implemented in their respective schools. At the end of the training, the principals committed to walking the talk and implementing what they learned from the one-week interaction.

The workshop was opened by the CEO Teacher Service Commission (TSC), represented by Dr Reuben Nthamburi, Director Quality Assurance and Standards and closed by the Director General State Department of Early Learning and Basic Education Ministry of Education represented by Mr Moses Karati. While recognising the role of STEM education in Kenya's economic development, the CEO Teacher Service Commission (TSC) challenged participants to transform their STEM schools into educational hubs where learners would be free to apply their imagination and creativity. Mr Makoba Kizito, the coordinator of STEM programmes at CEMASTEА, promised to implement the action plans.

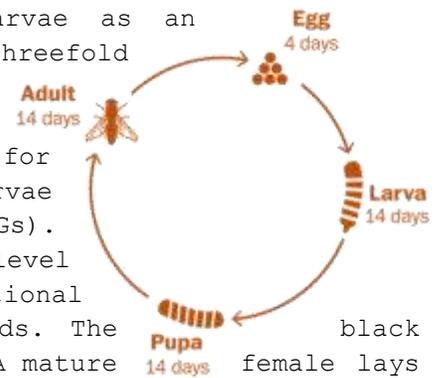
Winfred Magu and Kizito Makoba, CEMASTEА



A hydroponics STEM and ESD watermelon farming project in Vokoli Girls in Vihiga, one of the STEM schools

Modeling ESD: Black Soldier Fly Larvae Project

CEMASTEA, through the Education for Sustainable Development (ESD) program, is implementing a pilot project that utilises insect larvae as an alternative protein source in animal feed. The project's threefold objective includes the utilisation of the project as a teaching site on ESD, to demonstrate the use of Black Soldier fly (BSF), *Hermetia illucens* larvae as feed for poultry and fish and, to show the contribution of BSF larvae to the achievement of Sustainable Development Goals (SDGs). The larvae of the black soldier fly have a high protein level (above 40%) and thus a viable replacement to conventional protein sources of fish meal and soymeal in animal feeds. The black soldier fly has a life cycle of approximately 45 days. A mature female lays about 500 eggs that hatch into larvae within 3-4 days. The larvae feed on organic waste for an additional 14 days with 90% harvested as feed and 10% left to transit into pupae that take another 14 days to adults. A mature BSF has a lifespan of up to 16 days when they mate and repeat the cycle, thus making a sustainable production of the larvae feeds.



This is a cost practical project with most structures developed from locally available materials. This included a greenhouse and a holding net or 'love cage' for the adult flies to lay eggs on cartons conduits pipes ("eggies") and shelves to support basins where the eggs will be incubated, hatch and later larvae fed on organic

waste until they are ready for harvesting. After developing these structures, the Centre sourced for pre-pupae and pupae



Left: Wooden frames to hold the net "love cage" and basins containing food waste for the larvae to feed on. Right: Demonstration session to learners on the BSF larvae production process.

the BSF colony. While the demand for poultry and fish products continues to rise, farmers continue to cite the challenge of the high cost of feeds. A BSF project could translate to increased farmer profits from reduced production costs and boost economic development (both rural and urban) when implemented well. The use of organic waste in BSF production provides an opportunity to manage organic wastes from homes, schools and marketplaces; this reduces any potential adverse environmental effects.

Teachers and learners visiting CEMASTEAM have started interacting with the project. There are plans to introduce this project as a teaching and learning resource in STEM subjects and on ESD. The BSF project can demonstrate different concepts and topics in the curriculum, such as metamorphosis, green entrepreneurship and climate change.

Benjamin Kilonzo and Patrick Wanjohi, ESD CEMASTEAM.

School Visit

Ngaru Girls Secondary School

School visits at CEMASTEА play an integral role in enhancing learning and motivation towards STEM education and linking classroom experiences with real life. During the visits, learners engage in activities across various subjects, mainly in Science, Technology, Engineering and STEM and Mathematics (STEM), Education for Sustainable Development (ESD) innovations and Information, Communication & Technology (ICT). They perform experiments, engage in discussions also benefit from motivational talks.

In September, CEMASTEА hosted fifty-seven learners and two teachers from Ngaru Girls Secondary school Kirinyaga County. The learners had the opportunity to experience the fun of learning by engaging in various activities. In biology, they did anaerobic respiration, ecology, and transport in animals, support and movement. In chemistry, they undertook activities in electrolysis and gas law experiments. Concepts demonstrated in physics included electromagnetic induction, Van der Graph principle and pressure. In ESD, they focused on environmental conservation activities and the setting up of a black soldier fly project.

The most exciting part of the visit was the innovations laboratory. Here the learners performed activities to



Ngaru secondary school student engage in STEM and ESD activities during the visit.



enhance their critical thinking, problem-solving, and creativity and innovations skills. The Committee on Special Programmes, Student Learning coordinates the school visits at CEMASTEА.

Beatrice Macharia and Winfred Magu, CEMASTEА

Words of Encouragement



No disaster strikes except by permission of Allah . And whoever believes in Allah – He will guide his heart. And Allah is Knowing of all things. Quran 64:11

Sunshine School Teachers Undertake Customised Training

CEMASTEA conducted customised training for 30 teachers from Sunshine Secondary School, Nairobi, from July 12th - 16th, 2021. The training focused on enhancing teachers' ability to practice learner-centred lessons and skills for implementing lesson study. Such pedagogy is essential in supporting learners to apply the knowledge and skills gained from school due to their practical and problem-solving focus.

The opening ceremony for the training was presided over by Director CEMASTE, Mrs Jacinta Akatsa, HSC. In her address, she emphasised the need for teachers to simplify concepts for ease of comprehension by learners. She shared with participants insightful lived experiences of innovative strategies that promote effective learning.



A group photo of teachers from sunshine with Director CEMASTE and course facilitators

Further, the teachers are to embrace forums that allow sharing experiences in teaching and learning as a strategy to impact curriculum delivery. During the opening ceremony, deputy principal, Ms Mary Too, representing Chief Principal, Mr Otula, appreciated the selfless service teachers offer to ensure learners succeed. She acknowledged the partnership between CEMASTE and Sunshine School and applauded the Centre's significant role in equipping the teachers with the necessary knowledge and skills. She expressed optimism that the training will lead to the right attitude towards mathematics & sciences and integration of ICT in teaching and learning, improving performance. She also observed that the skills gained would be critical in shaping the future of the learners.

Deputy Director at CEMASTE, Mrs Lydia Muriithi encouraged the participants to invest in the learners with the knowledge gained. This is because learners are a critical aspect of the future. Deputy Director Training at CEMASTE Mr Patrick Kogolla applauded the school administration for facilitating the training of teachers. He encouraged the teachers to focus on quality teaching and learning as opposed to memorization due to over-teaching. He urged them to use strategies that involve the learners for better learning outcomes.

Dan Orero & Beatrice Macharia, CEMASTE

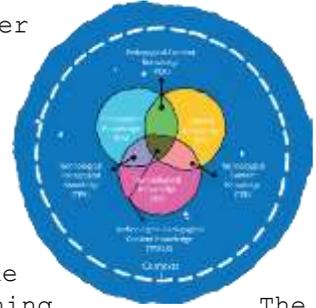
Words of Encouragement



Isaiah 41:10: So do not fear, for I am with you; do not be dismayed, for I am your God. I will strengthen you and help you; I will uphold you with my righteous right hand.

ICT Training: Witu Mjini Secondary School Teachers

Teacher Professional Development (TPD) empowers teachers to deliver better lessons and learning experiences. In this recognition, Witu Mjini Secondary school Principal Mr Paul Wainaina supported his teachers and lab technicians to attend a two-day customised training at CEMASTEIA from 27th and 28th August. The teachers also used the opportunity to engage in team-building activities facilitated by Wambugu wa Kamau, a motivational speaker.



The customised training focused on enhancing the skills of the teachers and technicians to integrate ICT in teaching and learning. The training with a practical orientation had sessions that included; *the concept of ICT integration, introduction to Technology, Pedagogical and Content Knowledge (TPACK) model, using remote learning, and conferencing resources to plan and deliver lessons.* These resources include Zoom, Microsoft teams, Google Meet and Google Classroom. Other activities during the training were visits to the Education for Sustainable Development (ESD) projects, mathematics room, science laboratories and the innovations room.

This training equipped the teachers with knowledge and skills for engaging learners remotely and developing innovative activities that could enrich learning in their school. Participants were awarded a certificate at the end of the training.



During the closing ceremony for the training, the Director

Director CEMASTEIA, Mrs. Jacinta Akatsa, HSC awards a certificate to the school principal Mr. Paul Wainaina



congratulated the school leader for supporting his entire staff to attend the training. She noted this set an excellent example for the rest of the schools in the country. She promised to promote the school through the provision of science equipment and further collaboration in future.

Teachers from Witu Mjini Secondary School, Lamu County, engaged in innovative learning activities during a visit to CEMASTEIA

Beatrice Macharia and Muyanga Mutua

Remote Learning: Training Teachers on ICT Integration

The integration of ICT teaching and learning is a flagship Teacher Professional Development (TPD) training programme at CEMASTEIA. From 6th - 17th September, CEMASTEIA conducted an online ICT for approximately 2000 secondary school teachers drawn from 22 Counties. This training was after the one done in May, where 4581 teachers drawn from 26

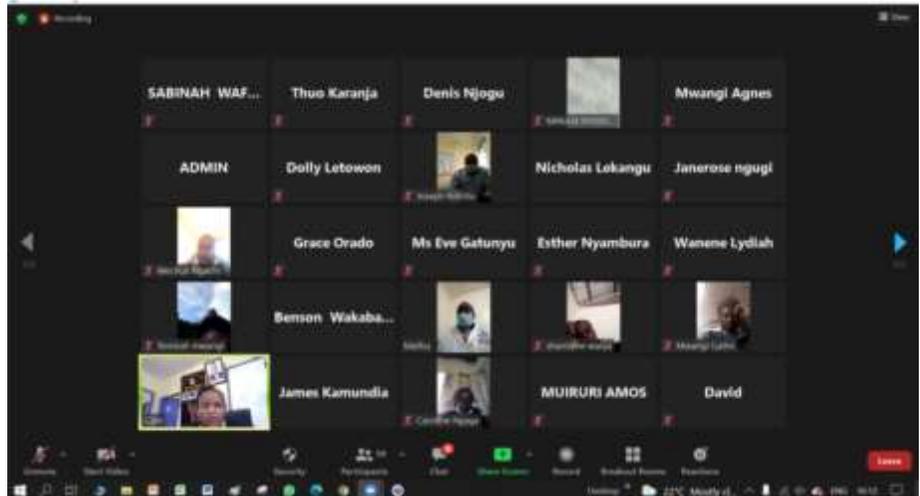
participated. CEMASTEIA staff facilitated the training with officers from the Ministry of Education (MOE) and the Teachers



A sample Google Classroom used in the training

Service Commission (TSC) monitoring the exercise. The County Teacher Capacity Development Committees (CTCDC) provided logistical support at the counties, including conducting the opening and closing ceremonies.

The training aimed at "Enhancing Teachers Competency in ICT Integration in Teaching & Learning Using Virtual platforms". By the end of the training, participants were expected to; demonstrate skills in using teaching and learning management systems for remote learning; develop digital teaching and learning resources; use virtual meeting platforms for remote learning, and plan innovative and implement ICT integrated lessons. The training employed an asynchronous (non-live but online) approach using the Google Classrooms and synchronous (live sessions) methods using the and live conferencing sessions



Picture showing a live session during the training

using the Zoom and Microsoft Teams. The

composition of participants by subject was as follows: Mathematics 25.2%, English 14%, Kiswahili 11.1%, Physics 7.1 %, Chemistry 7.7%, Biology 13%, CRE 1 %, Geography 5.9 %, History 6.1% Business, 2 % Agriculture 2 %, Computer 2%. Other subjects which had participants included Art and design, Metalwork, French, Home Science, IRE, Arabic and Music.

During the training, teachers gained skills for navigating the Google classroom, creating and sourcing digital teaching resources, and developing and implementing ICT integrated lessons using the TPACK model. They also used various digital platforms to deliver remote lessons. They sharpened their digital literacy skills, including navigating the Google Classroom, using Google Meet and Zoom during synchronous sessions.

Teachers cited these online tools as effective alternative modes of curriculum delivery. Further, they appreciated the training content in all sessions as beneficial regarding their work and societal needs. Notwithstanding, the successes some of the challenges noted included unreliable internet and poor connectivity and navigating online platforms using mobile phones. In future training, teachers will require more exposure to navigate the online platforms as alternative modes of curriculum delivery. At the end of the training, teachers formed communities of practice and support groups to continue sharing good practices, relevant digital learning resources and ICT integrated lessons.

Taking LEARNING to the next level: Installation of Conferencing Facilities

CEMASTEA has installed two states of the art teleconferencing facilities; one in the Boardroom and another in the chemistry classroom. It is expected that this facility will transform CEMASTEAs remote communication effectiveness and efficiency. Key installations include a high-resolution camera and a 55-inch rally display hub and screen.

Teleconferencing allows live, interactive 2-way communication using audio or audio-visual platform between geographically dispersed participants.

Paul Waibochi, ICT

Apart from facilitating remote meetings, the facility will offer distant STEM education by connecting teachers, students and other participants in different schools, institutions and countries. It will also provide virtual field trips, projects or experiments that require the help of facilitators in real-time. The facility will assist in reaching sparsely populated rural areas, where students can attend classes via video. Moreover, learners will interact and engage in discussions, explore, communicate, analyze and share information and ideas.



The installed conferencing facility at the chemistry classroom

Partnerships and Linkages

CEMASTEA works in partnership with both local and international organisations to realise its mandate. Over the years, there has been an increasing number of local and international partners interested in working with CEMASTE, especially in STEM education. Through the partnerships and linkages department, the Centre receives partnership requests from potential partners. In addition, the Centre serves as a continental secretariat of organizations such as; The African Union Cluster on STEM education, Association for Development of Education in Africa (ADEA)'s Inter-Country Quality Node on Mathematics and Science Education (ICQN-MSE), and the Strengthening of Mathematics and Science Education in Africa (SMASE-Africa).

As co-chair and Secretariat for the African Union Commission (AUC) cluster on STEM education in Africa, CEMASTE, participated in various virtual international meetings. One of the forums was guided by the theme "Accelerated implementation of CESA 16-25 - revitalizing and reinforcing clusters in implementing the AU Agenda for Transforming Africa's Education systems". A key output of this forum was a draft policy brief on the Status of STEM Education in Africa, and operational modalities for strengthening cluster coordination and effective implementation of annual activities". CEMASTE, in partnership with the ADEA secretariat in Abidjan, Ivory Coast, coordinated a continental situation analysis to assess the status of STEM Education in Africa. As an output, monitoring and evaluation framework was designed to track STEM Education quality at basic learning



Dr. Mercy Macharia, CEMASTE, facilitating a session during the training

levels in Africa. The report will be released later in the year during a Ministers' forum.

In partnership with Education Development Trust in Kenya, the department in 2021 implemented a course on gender-responsive STEM education for upper-grade primary school teachers of mathematics and science from various counties in Kenya. Over two hundred teachers were trained using a blended approach of virtual and face to face. The training focused on Gender-Responsive Pedagogy, activity-based learning and improvisation in Science, Technology, Engineering, and Mathematics (STEM) Education. As the Secretariat for SMASE Africa, the Centre is working with the University of Nampula, Mozambique, in organising the 18th Conference on Mathematics, Science and Technology Education in Africa (COMSTEDA18) from 23rd-25th November 2021.



Upcoming virtual COMSTEDA 18 forum hosted by the University of Nampula, Mozambique in partnership with SMASE-Africa

Mary W. Sichangi, Partnerships and Linkages



Universidade Rovuma,
Mozambique



Call for Papers and Participation in the 18th Conference on Mathematics, Science and Technology Education in Africa [COMSTEDA 18] and Annual SMASE-Africa Delegates Meeting

Conference dates: 23rd – 25th November, 2021

Delegate's meeting: 26th November, 2021

Theme: Teacher Professional Development in Africa: Knowledge, Skills and Values in STEM Learning Environments

Conference Brief: COMSTEDA is a continental platform for educators to share innovative ideas, best practices and interrogate teaching and learning mathematics and science issues. The aim is to strengthen the capability of youth in Science, Technology, Engineering and Mathematics (STEM) subjects for 21st-century living. The international forum brings educators, policymakers, researchers, teachers, NGOs, and public/private sector stakeholders to present papers, posters, exhibitions and workshops.

Conference Strands

<p>STRAND ONE <i>Teacher Professional Development in Africa: Developing Knowledge, Skills, and Values in STEM teaching & learning engagements</i></p> <ol style="list-style-type: none"> 1. School-based teacher professional development: policy, strategies and practices 2. Teacher professional development for competency-based education 3. Promising approaches in teacher professional development 	<p>STRAND TWO <i>School Culture and Learning in STEM</i></p> <ol style="list-style-type: none"> 1. Leadership for learning & role of professional associations 2. Creating space for in / out of school STEM learning 3. Equity & access in STEM education 4. Gender-based STEM education 5. Inclusive STEM education for learners with special needs 6. Increasing STEM learning outcomes for vulnerable children 	<p>STRAND THREE <i>STEM Curriculum Development, Implementation and Assessment</i></p> <ol style="list-style-type: none"> 1. Learner Engagement: evidence-based lessons on STEM/STEAM education 2. Pre-service teacher development: abilities, skills and values
<p>STRAND FOUR <i>ICT Integration in STEM Education</i></p> <ol style="list-style-type: none"> 1. Resources & solutions in learning STEM subjects 2. Learning STEM through games & robotics 3. Linking school & industry on STEM education 		

Conference Registration

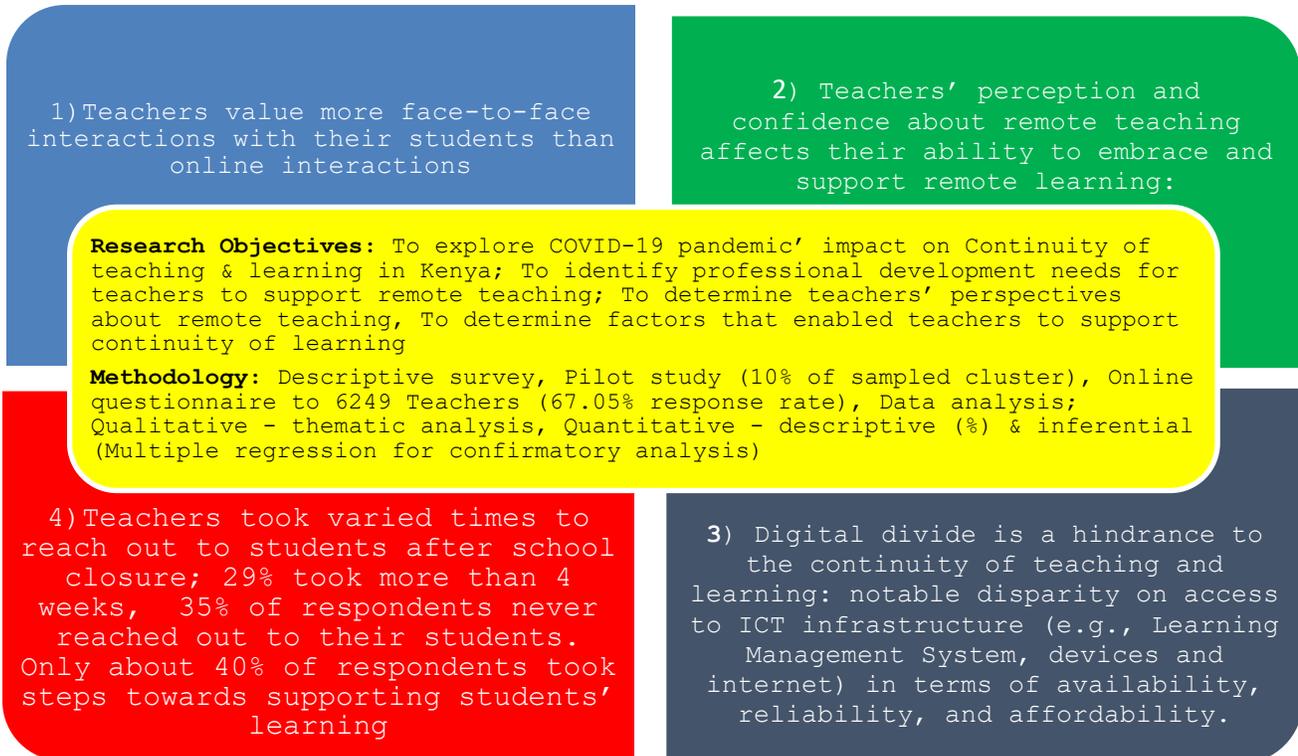
- Registration fees (Focal point USD.30, student USD.30, non-student USD 40). Covers admission to conference sessions. An additional USD 50 for papers to be included in the Journal on STEM Education in Africa (ISSN2617-6300); Rates applicable for COMSTEDA 18 only. Register on the link bit.ly/3cX7PBu
- Submission of full papers & registration deadline: 25th Oct., 2021

Send Abstracts / Full papers to: comsteda18@smase-africa.org; Inquiries: info@smase-africa.org

Payments to: NCBA, Account Name: SMASE-Africa, Account No.: 654 356 0017; Branch: Mamlaka Road; S.W.I.F.T. BIC: CBAFKENX; Currency: US Dollar Account; Send Bank slips to: Email: treasurer@smase-africa.org, Copy to: info@smase-africa.org; Website: www.smase-africa.org

UALIMU BORA: Mitigating COVID-19 disruption of teaching & learning

The COVID-19 Pandemic made 2020 a very challenging year for the education sector. The pandemic prompted a disruption of the face-to-face teaching and learning process. In particular, restrictions on onsite interactions between learners and teachers disrupted the Continuity of Teaching and Learning (CoTL). To assess the extent of this disruption, CEMASTEAs Research and Development Knowledge Management (R&DKM) Department conducted research' *teaching and learning during the COVID-19 Pandemic in Kenya: Insights from selected secondary school mathematics and science teachers*. The figure shows a summary of the research methodology and key findings.



An overview of research on the impact of COVID -19 Pandemic on Continuity of Teaching & Learning

The results of this research were shared with stakeholders both in Kenya and during the International Association for Intercultural Education (IAIE) 2021 virtual Conference hosted by the Kibbutzim College of Education Technology & Arts from June 27th -30th, 2021. Dr Mungai Njoroge, Deputy Coordinator R&D KM, at CEMASTEAs, made a presentation titled '*Strengthening of teachers' professional capabilities to leverage on technology to interrupt Covid-19 pandemic's disruption of active learning: A case of CEMASTEAs, Kenya*'. The presentation fused the findings from the research on the impact of the COVID-19 pandemic on continuity of education with CEMASTEAs experiences in strengthening teachers' professional capabilities to leverage technology in facilitating active learning.

Lessons from the conference affirm that as continuity of learning became a necessity, leveraging technology to debunk the COVID-19 pandemic's disruption of active learning became a popular intervention of choice for many countries. However, this intervention catapulted most teachers and learners to an unfamiliar territory of

online teaching that escalated inequity in education access, mainly in spaces where the digital divide is prevalent.

The emphasis from conference presentations critical to enhancing teachers' competencies to support Continuity of Learning beyond the pandemic time included: establishing and addressing the nature of interactions that learners want between them and teachers during online learning; mitigating digital divide - a threat to digital literacy and fluency - through deliberate policy interventions and stakeholders involvement; and strengthening intercultural education - the answer to how to embrace diversity in the classroom - during online interactions between learners and teachers.

Educulture (2021) describes intercultural education as a "response to classroom diversity aiming to go beyond passive coexistence, to achieve a developing and sustainable way of living together in multicultural societies through the creation of an understanding of, respect for and productive dialogue between the different groups" (<http://educulture.info/intercultural-education/>). As schools and colleges re-open and the resumption of face-to-face interactions, intercultural education becomes important due to long periods of separation encountered by diverse groups during the pandemic.

Dr. Mungai Njoroge, CEMASTEА

Transition

Physics Department was in grief after a vibrant member of the department, Mr Paul Kibanya, barely a month after the department lost its dean, the late Mr Ng'eny. Mr Kibanya, a dedicated member, passed on after a short illness on 15th June. Much can be said about the late Mr Paul Kibanya for his immense contribution to the physics department. Albert Einstein said, "The value of a man should be seen in what he gives and not in what he can receive". These words are a reflection of the department's view of our departed colleague. Mr Kibanya represented the department in showcasing physics ASEI lesson documentary whose effect has reverberated in Africa and across the globe. He was an example of a life that exemplified brilliance, a life that inspired emulation, a life that burned like a candle so that others' paths were lit. Mr Kibanya would never give up having a task accomplished, and during his physics sessions, he would leave participants yearning for more. Most staff at CEMASTEА have something to remember about him, and indeed he left a mark in our lives, especially his colleagues in the physics department. Although much too short, his was a life well-lived! He was a determined, visionary, collaborative, goal-oriented, caring person who loved life and all it offered. Kibanya, a caring and beloved family man, a cherished colleague, a scholar and a friend, will be missed by many, but never will he be forgotten by the CEMASTEА fraternity and those who were fortunate enough to have interacted; closely with him!



Led by the Director Mrs Jacinta Akatsa, CEMASTEА staff held an online requiem service for the late colleague. During the service, colleagues eulogised the late as a hard-working, social and diligent colleague who took a keen interest and dedication to his work. As they say, a legend never dies; he rests. Mr Kibanya has rested, life is a journey, and we are all sojourners. Fare thee well, Mr Paul Kibanya.

Philip Maate, Dean Physics

Upcoming **EVENTS**



INTERNATIONAL WEBINAR ON PRINCIPLES OF 'SLOW EDUCATION' IN THE CONTEXT OF STEM

12TH - 26TH OCTOBER, 2021: TUESDAYS & THURSDAYS
11:30AM EAT/8:30AM GMT/9:30AM WAT/10:30AM CAT/10:30 A.M SAT

Join Education Experts as they discuss various topics on integration of the principles of slow movement in STEM Education

Target: Ministry of Education officials, School Principals, Heads of Departments (Maths & Science), Teachers (Maths & Science), CEO's of STEM-Based organizations and Teacher Trainers

 Cemastea  @CemasteaKenya  CEMASTEA Educational Channel

Partners:



ADEA Inter-country Quality Node
Maths and Sciences Education



Kenya Innovation Week 2021



Happening late this year from **6th to 10th Dec 2021**, Kenya Innovation Week is a flagship innovation forum for the country run by the **Kenya National Innovation Agency**. It seeks to showcase the innovativeness of Kenyans under which the national priorities of the Big 4 Agenda and Vision 2030 will be advanced. *Check out Details & Register at <https://kenyainnovationweek.com/>*

4 Thematic Areas

 Skills for Innovation CBC, Skill Development	 Tech and the 4th Industrial Revolution Robotics, VR, AI, IoT	 Research & Commercialization ST&I, Policy	 Startup Kenya Investors, Funding
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Theme: The innovativeness of Kenyans

Your Mental Health and Wellbeing

According to the World Health Organization (WHO), health is a state of complete physical, mental and social well-being and not merely the absence of disease. Mental health affects how we think, feel. It helps determine how we handle stress, relate to others, and make choices. Our society seems to be experiencing increased incidences that point to mental health disorders, some with fatal outcomes. A mental health disorder is a condition that affects a person's thoughts, behaviours or moods. This may last for a season or could be chronic. Most mental health disorders are triggered by either biological, life experiences, such as trauma or abuse, psychological and environmental factors. Some early warning signs of mental health disorders may include;

- Drastic mood changes and Intense emotions: Having constant feelings of overwhelming fear or worry, which is unexplained, having feelings of sadness or withdrawal, ongoing anger or irritability, isolation, severe mood swings, avoiding previously enjoyable activities.
- Physical harm: Self-injurious behaviour such as cutting, having suicidal thoughts, giving away

treasured possessions, risky behaviour that could lead to self-injury

- Abusing drugs and other substances, including heavy drinking
- Behaviour changes: Such as fighting, use of weapons, threatening others and oneself.

If you experience such signs or notice these signs with members of staff or your family, do not be alarmed; do not remain silent. Help is available. People with mental health problems can get better, and many recover completely.



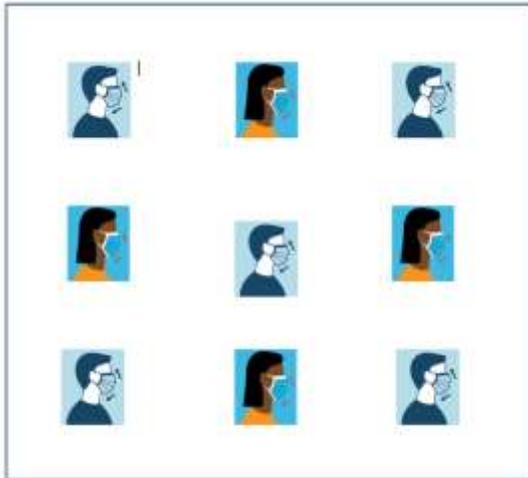
Remember that you have control over your mental health and well-being. Find a routine that works for you that includes a healthy diet, exercise and regular sleep patterns. Engage your family, friends, co-workers, and most importantly, your faith community. Be realistic and gentle in handling yourself.

Substance abuse is not an option. Stay away from drugs and alcohol; surround yourself with positive messages, people and activities. Keep your family and friends close. If need be, visit the nearest medical health care facility for treatment. Talk to a counsellor, social worker, nurse or a trusted adult. Continue to do what you love most, like reading, sports, writing, nature walks and community service. This will help you to feel better.

Do not give up; there is hope!

Mwangi A, HIV & AIDS committee Chair

Coffee Break



Circuit Breaker Game: There are nine people inside the square. Quarantine the persons from each other by drawing only two squares inside the outer big square.

Mathematics: The handshake Problem



There are 50 people in a room; they shake each other's hand once. How many handshakes are there?

Fact: Could this be true...

That if the internet went down for a day, 196 billion emails, 3 billion Google searches and 500 million Tweets would have to wait?



Biology Web Quest: Truth or Myth...

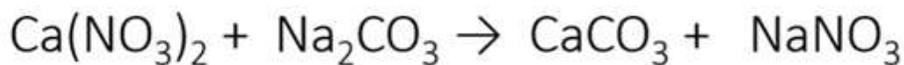
- Are there some parts of the human body that get oxygen directly from the air and not from the blood?
- Is it true that you can boil a frog without it jumping out to safety if you raise the temperature slowly?

Do some research...



Why would the biology exam supervisor sit very close to this animal during the biology exam?

Balance the following chemical equation...



Facts and Myths about COVID -19 (from a presentation by first Assurance to CEMASTEА staff)



Myth: The COVID-19 vaccine causes infertility in women.

Fact: Misinformation on social media suggests the vaccine trains the body to attack syncytin-1, a protein in the placenta, which could lead to infertility in women. The truth is, there's an amino acid sequence shared between the spike protein and a placental protein; however, experts say it's too short to trigger an immune response and therefore doesn't affect fertility.



Myth: Certain blood types have less severe COVID-19 infections, so getting a vaccine isn't necessary.

Fact: Research has shown there is no reason to believe being a certain blood type will lead to increased severity of COVID-19. By choosing to get vaccinated, you are protecting not only yourself and your family but your community as well.

Unveiling Drug Abuse Roadmap in Schools

The National Guidelines for Alcohol and Substance Use Prevention and Management in Basic Education Institutions 2021 were unveiled on 9th July at the Kenya Institute of Curriculum Development (KICD). Those who graced the occasion were Education Cabinet Secretary Professor George Magoha and Interior Principal Secretary Dr Engineer Karanja Kibicho. The Director, Mrs Jacinta Akasta, represented CEMASTEA.

Speaking during the ceremony, the CS Prof. George Magoha urged parents to be responsible for their school-going children by avoiding drugs in their presence even as the ministry put measures to ensure that learning institutions are free from drugs. Dr Engineer Karanja Kibicho assured support in safeguarding the school environment to ensure that they are drug-free. While presenting a copy of the guidelines to CEMASTEA ADA prevention committee chairman Mr Philip Maate, the Director CEMASTEA said that the guidelines stipulate effective ways to prevent progression to substance use disorder. She further noted that they guide on early detection of vulnerable learners or staff and initiate support mechanisms to mitigate the consequences of substance use. She urged the chair to use the guidelines to ensure a drug-free workplace environment at CEMASTEA.

As indicated in the document, the purpose of

the guidelines is to support learning institutions to prevent and manage alcohol and substance use. The goal of the guidelines is to promote a safe and healthy environment free from alcohol and substance use to enable learners to realize their full potential. The document further reads that key players in preventing and managing alcohol and substance use in schools include the Ministry of Education (and its Semi-Autonomous Government Agencies), TSC, National Authority for Campaign Against Alcohol and Drug Abuse (NACADA), and the Ministry of Health. These guidelines are therefore very relevant for CEMASTEA and will enhance the capacity of the ADA prevention committee to ensure the workplace is free from substance use disorder.

Philip Maate, Chair, ADA Prevention Committee



Director CEMASTEA handing over copies of the schools drug policy to Mr. Maate Philip, Chair Alcohol, Drugs and Substance Abuse Prevention Committee (ADA) CEMASTEA

COVID 19: Keep the promise, mask up; we are not yet there.



Mainstreaming: National Values & Principles of Governance

The Constitution of Kenya under Article 10(2) highlights 17 National Values and Principles of Governance. These Values and Principles bind all state organs, state officers, public officers, and persons whenever they apply or interpret the



Constitution, enact, apply or interpret any law, or make or implement public policy decisions. Values refer to beliefs or ideals shared by members of the same community, culture, and nation. On the other hand, Principles of Governance are normative standards that oblige the state to perform its functions to promote the general well-being of its people. The first one, Patriotism (Uzalendo), refers to love, loyalty and devotion shown to one's Country. It calls for one's selfless services and sacrifices for the Country.

All Ministries, Departments and Government agencies are expected to annually report on the achievement of each of the 17 values, among other commitments to the Division of National Cohesion and Values of Governance. In the last three financial years, CEMASTEIA has scored 100 % on implementing national values and principles of Governance.

At CEMASTEIA, most of the values and principles are mainstreamed into activities. Such include the singing of the national anthem during the start of significant meetings and forums, engaging in corporate social responsibility by donating resources such as mobile laboratories to needy schools, planting trees, recycling of resources such as wastewaters.

To further understand these principles and how CEMASTEIA can further mainstream them in its core activities, the committee on National Values and Principles of



Singing of the National anthem and raising the flag as a symbol of patriotism (Uzalendo) and, planting our own vegetables reducing the need to buy and creating work (Sustainable Development (Maendeleo ya Kudumu)

Governance at CEMASTEIA underwent a one week's training. The training was conducted by a team from the Office of the President, Ministry of Interior and Coordination of National Government, Directorate of National Cohesion and Values.

NCPG Committee

THE SPIRIT OF OLYMPICS: Humility over Hubris

The Olympics, regarded as the world's leading sports event, originated in ancient Greece some 2,300 years ago as a festival of art and sport. However, the first modern Olympics was held in Athens, Greece, in 1896, attended by 280 athletes, all-male, from 12 countries. Early Olympics took one day, but current ones take 17 days and are held every four years. Before the 1970s, the Olympics were limited to amateur competitors. Most sports athletes participated in the nude, with explanations for this practice ranging from eccentric, anthropological, to religious. The Japan 2020 Olympics had 33 sports and 46 disciplines. The Olympics currently also embrace "environment" and "culture" as a part of its themes.

The Olympics is driven by the spirit and philosophy of Olympism which calls for "The elevation of the mind and soul, overcoming differences between nationalities and cultures, embracing friendship, a sense of solidarity, and fair play; ultimately leading to the



Pride of a Nation: Eliud Kipchoge, Gold medal winner Tokyo 2020 men's marathon and Faith Kipyegon, Gold medal winner women's 1500M, Tokyo 2020.

contribution towards world peace and the betterment of the world ". The athletes live this spirit during the games. While winning is always in their mind, the majority display a lot of humility, always lifting each other when they stumble and fall as losers and winners embrace and congratulate each other at the finishing line. On very few occasions, is there a display of hubris. Kenya Olympians have, over and over again, displayed this spirit and philosophy of Olympism.

Kenya has participated in the Olympic Games nine times since 1956 (Melbourne Austria), except for the boycotted 1976 and 1980. In the 2020 Olympics recently held in Japan, Kenya was represented by 85 athletes (37 men 48 women) who participated in six sports. Amidst the challenges of heat and humidity, the athletes did well. Kenya finished position 19 overall and was also the top African Country with ten medals (4 Gold, 4 Silver and 2 Bronze). The 2024 Olympics will be held in Paris, France.

Two of the star athletes in the Kenya team were Mr Eliud Kipchoge and Ms Faith Kipyegon. Mr Kipchoge, regarded as the greatest marathon runner, won gold in the final men's marathon, his second having won one in the Rio Olympics. At the finishing was a joke that Eliud had time to take water, offer an interview and then turn on to welcome the others as they finished! Ms Kipyegon won the gold medal in the women 1500M setting a new Olympic record.

Thuo Karanja, CEMASTEVA

Courtesies: BBC Sport, Tokyo Organizing Committee and Britannica 2020

COVID-19: Breakdown or Breakthrough



During his address to the 76th Session of the United Nations General Assembly under the theme *'Building resilience through hope to recover from COVID-19,'* the UN Secretary-General noted that *'the choices we make or fail to make, today could result in a further breakdown, or a breakthrough to a greener, better, safer future.* He spelt out The Common Agenda designed to accelerate the implementation of existing agreements, including the Sustainable Development Goals. While noting that increasingly, people are turning their backs on the values of trust and solidarity in one another, he opined on the urgent need to re-embrace global solidarity and find new ways to work together for the common good. On COVID 19, the UN SG expressed the importance of a worldwide vaccination plan to deliver vaccines against COVID-19 into the arms of the millions of people who are still being denied this primary lifesaving measure.



Excerpts from statement Secretary-General António Guterres during the General Debate of the 76th Session of The United Nations General Assembly September 22, 2021



While addressing the 76th Session of the General Assembly, President Uhuru Kenyatta recalled the words of the UNSG on Humanity facing *"A stark and urgent choice: breakdown or breakthrough"* and the need for the world to take UNSG's message seriously. President Uhuru mourned the close to five thousand Kenyans among the 4.7 million globally who had succumbed to COVID-19. He informed the Assembly of Kenya's swift and bold response to contain the pandemic, including undertaking measures to cushion different sectors of

the economy. While sadly noting that the asymmetry in the supply of vaccines reflects a multilateral system that is in urgent need of repair, the President pointed out that the surest way to "Building Back Better" was by making vaccines available to the world in an equitable and accessible manner.

Excerpts from the statement by H.E. Hon. Uhuru Kenyatta, President of the Republic of Kenya and commander-in-chief of the Defence Forces during the General Debate of the 76th Session of The United Nations General Assembly September 22, 2021

Thuo Karanja, Editor

COVID 19: Keep the promise, sanitize; we are not yet there.



Picture Speak: Q1 Events



Mount Kenya University (MKU) Vice Chancellor Prof. Deogratius Jaganyi (right) receiving Accreditation to offer Teacher's Professional Development (TPD Programme from TSC CEO Dr. Nancy Macharia, CBS. Looking on is the Kenya National Union of Teachers (KNUT) Secretary General, Collins Ovu.



Dr Roselyn Marandu-Kareithi (PHD). Country Lead. Allan and Gill Gray Phillanthropy, Kenya giving an appreciation pack to Director, CEMASTEА, Mrs. Jacinta Akatsa, HSC



Director, CEMASTEА, Mrs. Jacinta Akatsa, HSC gifts teachers of Pricipal Kenya High school with assorted Physics innovations kit for their best performance nationally in the 2020 Physics in KCSE



Ms. Clotilda Nyongesa, CEMASTEА receives a certificate from Dr. George Kosimbei of Kenyatta University upon completion of a one week training on Designing Effective Intellectual Property Policies for Academic and Research Institutions. Training was organized by Kenya Innovation Agency (KENIA).



Left Mr Wambugu wa Kamau taking students from Kahuhia High school Murang'a on leadership motivational talk and Right facilitating a team building session teachers form Witu Mjini. These teambuilding and leadership training activities took place at CEMASTEА.

Hospitality Services at CEMASTEА

In addition to contributing to Teacher Professional Development, CEMASTEА has a vibrant hospitality department. Hospitality services for hire by external and internal customers include accommodation, catering and bakery. Visit CEMASTEА to enjoy some of the products from the bakery where Chef Beatrice Dede (Betty) is in charge. You may be lucky to taste fruit cake. Many schools currently bake their bread and cakes for their learners. How can a baking activity support the learning of various skills and concepts in multiple STEM subjects? There are numerous applications of STEM knowledge mathematical and scientific process skills applied in baking a fruitcake. The homework here is for teachers together learners to visit a bakery in their schools, observe the baking process, and identify some of these skills they learn as they are applied in the process.

3. FRUIT CAKES

Ingredients:

- 200g flour
- 50g glace cherries
- 125g margarine
- 2-3 eggs
- 100g chopped peals
- 125 castor sugar
- 200g sultana
- 50g Almonds
- ½ tspn Mixed spice
- ½ tspn baking powder

Method

- Cream fat and sugar till soft and fluffy gradually add the beaten eggs, mix well
- Fold in the several flour, washed and dried fruits, chipped cherries, spice and peel, combine lightly.
- Place in alightly greased 14cm (7 inch) cake tin chopped
- Bake regular 3 (150oC) for approx. ¾ hrs (the regular times are calculated on a 1/3 - 9 scale area)

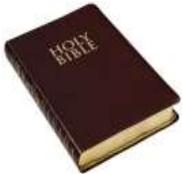


Chef Betty at, CEMASTEА baking a fruit cake, order yours now!

Beatrice Dede, Catering, CEMASTEА

Words of Encouragement

Isaiah 46:3-4



3 "Listen to me, you descendants of Jacob, all the remnant of the people of Israel, you whom I have upheld since your birth, and have carried since you were born.

4 Even to your old age and gray hairs I am he, I am he who will sustain you. I have made you and I will carry you; I will sustain you, and I will rescue you.

Message: Our God created us and cares for us. Even in these scary times of COVID 19, his love is so enduring that he cares for us, and He will do so throughout our lifetime. Just hearken unto his voice and be lifestyle evangelists in whatever you do

Clotilda Nyongesa, CEMASTEА



Surat Ash-Sharh [94:5-6] - The Noble Qur'an

"Verily, with every difficulty there is relief. Verily, with every difficulty there is relief."

Khalfan Mtsumi, CEMASTEА



CONTACTS: Please visit us on our social media platforms
Click on this link to give feedback:
<https://forms.gle/RkXNWXQ3ehEsqhr48>



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